

DRAFT

Mr. Mike Delamore
United States Bureau of Reclamation
1243 "N" Street
Fresno, CA 93721

Dear Mr. Delamore:

I am writing in support of The Comprehensive Monitoring Plan for the Grassland Bypass Project, Phase II.

The San Joaquin River Management Program provides a forum to identify problems and solutions to issues related to wildlife, flood protection, water quality, water supply, fisheries, and recreation. The SJRMP Action Team and Advisory Council have reviewed and discussed this project, and support the effort to improve water quality in the San Joaquin River System.

The Advisory Council is in support of the monitoring plan proposed by the United States Bureau of Reclamation and understands that this project will provide information to improve or prevent further degradation of water quality along the lower San Joaquin River.

The 1995 San Joaquin River Management Plan recognizes the need to isolate drainage water of parts of the Delta-Mendota Canal service area from wetland water supplies to reduce the risk of contamination of wetland habitat. The implementation of this program will support the development of solutions that address water quality issues.

If you have any questions in this regard, please call Paula Landis at (559) 230-3310.

Sincerely,

Timothy Ramirez, Chair
San Joaquin River Management Program
Advisory Council

**SUPPORTING
DOCUMENTATION
IS ON THE
FOLLOWING PAGES**

Cover Sheet

1. Specify: ! Science and Source Assessment
 Pollution Prevention and Source Control
 Treatment Technology
 ! Drainage Problems in the San Joaquin Valley
 Delta Agricultural Drainage
2. Specify: Individual Application
 ! Joint Application

1. Proposal Title: *Comprehensive Monitoring Plan for the Grassland Bypass Project, Phase II*

2. Principal Applicant (Organization or Affiliation): U.S. Bureau of Reclamation

3. Contact (Name and title): Robert W. Young, Technical Team Leader

4. Mailing Address: Bureau of Reclamation, MP-150
 2800 Cottage Way
 Sacramento, CA 95825

5. Telephone Number: 916.978.5042

6. Fax Number: 916.978.5055

7. E-MAIL Address: ryoung@mp.usbr.gov

8. Funds Requested (Dollar Amount): *\$1,305,000 (\$435,000 per year)*

9. Applicant Cost Share Pledged: *0*

10. Duration (Month/Year to Month/Year): *01/2002 to 12/2005 – three years*

11. State Assembly and Senate District(s) and Congressional District(s) where the Project is to be conducted:
 SA25, SA26, SS12, SS16, US Con 11, US Con 18

12. Location and Geographic Boundaries of the Project: *Western Merced and Fresno Counties*

13. Name and signature of official representing applicant. By signing below, the applicant declares the following:
- ▶ The truthfulness of all representations in the proposal;
 - ▶ The individual signing this form is authorized to submit the application on behalf of the applicant; and
 - ▶ The applicant will comply with contract terms and conditions identified in this Proposal Solicitation Package

(Printed name and title of applicant)

(Signature of Applicant)

(Date)

Comprehensive Compliance Monitoring Plan for the Grassland Bypass Project
Phase II
U.S. Bureau of Reclamation
AA Proposal for CalFed Bay-Delta Drinking Water Quality Program®
July 3, 2001

U.S. Bureau of Reclamation (USBR) along with Grassland Bypass Project (GBP) cooperators are pleased to submit this proposal in response to your Proposal Solicitation Package (PSP) dated May 2001 for the CalFed Bay-Delta Drinking Water Quality Program. Our goal for the Phase II Grassland Bypass Project over the next nine years is to implement significant activities leading to the improvement in water quality in the lower San Joaquin River. Demonstrated accomplishments can only be shown through an aggressive monitoring program. Our request is for partial funding of the GBP's compliance monitoring plan focused on quantifying Project's impacts on the San Joaquin River relative to the loading of salts, boron and selenium.

Recognizing that the GBP represents both regulatory and non-regulatory agencies, and recognizing that other supportive research programs continue or will be started, and recognizing that additional monitoring projects continue or will be started (real-time monitoring), our program recognizes the extraordinary opportunity to work together toward improving water quality in the lower San Joaquin River. Another way of saying the above, is that a portion of the GBP monitoring plan is regulatory, and will continue with or without financial augmentation from this PSP. However, all we gain from regulatory monitoring is to determine if the program meets operational requirements as stated in the GBP's Use Agreement. In-order to have the assurances of science based decisions, additional information, such as the fate and transport of selenium through the ecosystem, is required. Another issue is to develop a science based methodology to determine the timing of and quantity of dilution flows to manage water quality standards in the lower San Joaquin River due to the GBP.

The GBP concludes the initial 5-year program on September 30, 2001. An EIS/EIR has been completed for extending the program from October 1, 2001 through December 31, 2009. The initial program had a monitoring plan specifying the data collection and reporting requirements. The Phase II monitoring plan is currently being written. Components of the new monitoring plan constitutes the Bureau's request from CalFed for financial assistance.

A. Scope of Work

1. Abstract

a. Introduction

The Grassland Bypass Project is an innovative program that was designed to improve water quality in the wetland channels used to deliver water to wetland areas and to lower discharges of salts, boron and selenium to the lower San Joaquin River. Prior to the GBP, subsurface agricultural drainage water was conveyed through these channels to the San Joaquin River. This limited the availability of these wetland channels to deliver high-quality habitat water supplies. The GBP consolidates subsurface drainage flows on a regional basis and utilizes a portion of the federal San Luis Drain to convey the flows around the habitat areas (figure 1). In order to meet the rigorous salt, boron and selenium load limits, the Grassland Area Farmers (GAF) have implemented a wide variety of practices which include: formation of a regional drainage entity,

newsletters and other communications with the farmers, a monitoring program, an active land management program to utilize subsurface drainage on salt tolerant crops, use of State Revolving Fund loans for improved irrigation systems, use and installation of drainage recycling systems to mix subsurface drainage water with irrigation supplies under strict limits, tiered water pricing and tradable loads programs. The GAF are also pursuing in-valley treatment options to reduce drainage discharges and position themselves to meet future salt standards.

b. Methods

In place of the traditional conceptual model to demonstrate the phenomenon trying to be understood, a schematic diagram (figure 2) is being presented. The diagram traces the agricultural drainage flows through the GBP routing plan, as well as the natural channels showing discharges from regular surface hydrologic conditions. Also shown within the diagram are relative monitoring stations. The rigorous monitoring program is outlined in tables 1 through 7.

c. Objectives

The objective of this proposal is to augment components of the GBP monitoring plan. The monitoring plan outlines the processes for collecting data to determine if the terms and conditions of the GBP are being met. Flow, water quality, sediment, biota, and toxicity data are collected to assess impacts. The data gathered from this effort allow evaluation of the degree to which the commitments of the use agreement are being met. The comprehensive data collection effort undertaken for the monitoring program may allow more in-depth, interagency research projects to be performed than might have been otherwise possible. The data collection, reporting and dissemination process will be implemented to foster close cooperation and coordination, not only with the agencies and organizations involved in the monitoring program but also with the research community.

2. Issues

The primary issue that this PSP addresses is the long term problem of agricultural drainage associated with farm activities in the Grasslands sub-area as identified in the San Joaquin Valley Drainage Program's final report, often referred to as the ARainbow® Report. The problem and associated research activities, as well as implementation strategies, are well documented. A recommended solution to reduce loads of salt, boron, and selenium to the lower San Joaquin River was the implementation of the GBP. Water quality objectives for the San Joaquin River have been established as part of the San Joaquin Basin Plan and documented in the CVRWQCB's waste discharge permit for the GBP. An example of the water quality objectives is shown for selenium in the following table. Additional examples are established for Boron, and other constituents.

3. Nature, Scope, and Objectives

The monitoring plan is designed as a coordinated effort among USBR, USFWS, USGS, CVRWQCB, CDFG, and SLDMWA. The monitoring plan has been designed to incorporate, where possible, the existing monitoring efforts of participating agencies. The monitoring plan is conceived as a working document. Modifications will occur periodically based on a review of the data relative to the project objectives and commitments. Should certain monitoring efforts appear to add little to the understanding of conditions resulting from this project, they may be reduced or eliminated. Conversely, should monitoring objectives or project commitments not be met or satisfactorily evaluated by the current plan, the effort may be expanded.

Water Quality Objectives - Selenium

| Waterbody/Water Year Type | January 1997 | October 2002 | October 2005 | October 2010 |
|---------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|
| Salt Slough and Wetland Water Supply Channels listed in Appendix 40 of Basin Plan | 2 _g/L monthly mean | | | |
| San Joaquin River below the Merced River. Above Normal and Wet Water Year types | | <i>5 _g/L monthly mean</i> | 5 _g/L 4-day average | |
| San Joaquin River below the Merced River; Critical, Dry, and Below Normal Water Year types | | 8 _g/L monthly mean | 5 _g/L monthly mean | 5 _g/L 4-day average |
| Mud Slough (North) and the San Joaquin River from Sack Dam to the Merced River | | | | 5 _g/L 4-day average |

Source: CVRWQCB

The distinction between compliance monitoring requirements for the GBP, and research/investigation requirements to improve selenium and drainage management, has been and will likely continue to be blurred. Additional research and investigations will be required to address questions related to selenium mobilization, fate, and transport in order to better predict and prevent impacts, to develop, implement and evaluate improved drainage management techniques, and through these efforts develop and implement a long term drainage management plan.

4. Methods, Procedures, and Facilities

The components for this bullet are documented within the GBP Compliance Monitoring Plan and the associated QAPP.

5. Schedule

Monitoring is performed daily, weekly, monthly, quarterly, as well as annually. For the purpose of this PSP, an enhanced annual report showing the Add-on activities will be prepared by project staff. If the funding is limited to three years, we would prepare three annual CalFed reports at the end of each year.

6. Monitoring and Assessment

Implementation of the GBP monitoring plan is the responsibility of the DCRT. Failure to comply with the plan will result in significant negative consequences to the overall program. GBP has been and continues to be supported by public trust. Part of that trust agreement is to monitor and report findings monthly. Violation of the monitoring plan would not bode well for the future programs.

7. Intermediate impacts

Management decisions will be implemented immediately based on current results. Program is meant to be dynamic. Examples of such decisions would be in managing storm related runoff that re-deposits selenium laden water and sediments over the valley floor.

8. Long-term Operations and Maintenance

Monitoring for the GBP will continue as long as requirements exist. Flow and water quality monitoring will probably continue well into the future.

B and C. Outreach, Communications, Cooperators, and Participants

Project Organization

The GBP involves the coordination and cooperation of several State and Federal agencies whose authority, interests, or activities directly overlap in one or more aspects of the GBP. These agencies include USBR, USFWS, USGS, USEPA, CVRWQCB, CDFG and the SLDMWA. The latter organization includes local drainage and water districts that participate in the drainage activities. The Grassland Area Farmers (GAF) formed a regional drainage entity under the umbrella of the SLDMWA.

Oversight Committee (OC)

The Oversight Committee is comprised of senior level representatives from USBR, USFWS, CDFG, CVRWQCB, and USEPA. The role of the OC is to review process and assure performance of all operations of the GBP, including monitoring data, compliance with selenium load reduction goals, and other relevant information. The OC makes recommendations to the GAF, USBR, and the CVRWQCB, as appropriate, regarding all aspects of the GBP. The OC meets in a public forum, as needed, to review the status, progress, and monitoring results of the GBP.

Technical and Policy Review Team (TPRT)

The Grassland Bypass Project Oversight Committee formed the TPRT to serve as staff to the OC. The TPRT consists of a representative from CVRWQCB, CDFG, USBR, USFWS, and USEPA, plus a member from USGS serving as an independent technical advisor. The TPRT is responsible for obtaining and providing the necessary information, developing alternatives, and formulating recommendations to the OC.

Data Collection and Reporting Team (DCRT)

The Data Collection and Reporting Team consist of the agency representatives and contractors responsible for data collection and reporting. The DCRT is responsible for coordinating monitoring activities, identifying and resolving any issues involving data collection and reporting, and making recommendations for revision of data collection and reporting procedures to the TPRT. The DCRT prepared the monitoring plan as well as the associated Quality Assurance Project Plan (QAPP).

Data Management

Each agency collecting data is responsible for its own internal data quality and management procedures. These are detailed in the QAPP. In addition, each agency submits its data to the San Francisco Estuary Institute (SFEI). Each agency is responsible for collecting and analyzing the data associated with its particular area of expertise. USBR collects sediment data. USGS and SLDMWA collects flow data. USFWS and CDFG collects biological data. CVRWQCB collects water quality data. SLDMWA, through its consultant, conducts sediment quantity surveys and conducts toxicity tests.

Reporting

The San Francisco Estuary Institute (SFEI) assembles, summarizes, and distributes monthly, quarterly and annual reports. The monthly report presents data collected during that particular month, including the calculated selenium load discharged at Station B, the terminus of the SLD. Quarterly data reports consist of all available data from all stations during a 3-month period. SFEI also prepares quarterly narrative and graphical summaries of the most recent Project data. The focus of SFEI is to report data and information from all sampling sites in a timely manner. All reports are distributed to the participating parties and are available to the public upon request.

A web site for the GBP provides program results.

D. Costs and Benefits

Methodology

Combined monitoring costs have been estimated for the seven activities outlined in tables 1 through 7. Additional costs have been estimated for the compilation and reporting efforts from SFEI along with costs from non-monitoring activities by the DCRT. Costs have been estimated and are in relation to total effort of the program. Revised costs will be provided when requested.

All costs are in annual terms. The annual amount requested for the PSP, \$435,000, is for the non-regulatory costs, only. The following table summarizes the costs.

Estimated Financial Breakdown

| Monitoring Activity | Estimated Costs | Regulatory Costs | Non-regulatory Costs |
|-----------------------------------------|-----------------|------------------|----------------------|
| 1. Flows | 220,000 | 160,000 | 60,000 |
| 2. Water Quality | 200,000 | 120,000 | 80,000 |
| 3. Biological | 300,000 | 150,000 | 150,000 |
| 4. Toxicity | 50,000 | 25,000 | 25,000 |
| 5. Sediment Quality in Wetland Channels | 100,000 | 50,000 | 50,000 |
| 6. Sediment Quality in the SLD (annual) | 30,000 | 30,000 | 0 |
| 7. Sediment Volume in the SLD (annual) | 30,000 | 30,000 | 0 |
| 8. Compilation and Reporting | 70,000 | 35,000 | 35,000 |
| 9. DCRT Activities | 70,000 | 35,000 | 35,000 |
| 10. Combined | 1,070,000 | 635,000 | 435,000 |

G. Environmental Documentation

An Environmental Impact Statement and Environmental Impact Report for phase II of the Grassland Bypass Project has been prepared. A record of decision will be submitted in September. A waste discharge permit was issued to the Grassland Bypass Project by the Regional Water Quality Control Board.

H. Quality Assurance Project Plan

A quality assurance project plan (QAPP) for the Compliance Monitoring Plan of the Grassland Bypass Project was developed for the first five years and will be updated covering the next nine years.

Supporting Documents

Reporting Documents

SFEI. Grassland Bypass Project, Monthly Report. Individual Reports. Water-years 1997, 1998,

- 1999, 2000. San Francisco Estuary Project, Richmond, CA.
- SFEI. Grassland Bypass Project, Quarterly Data Report. Individual Reports. Water-years 1997, 1998, 1999, 2000. San Francisco Estuary Project, Richmond, CA.
- SFEI. Grassland Bypass Project, Quarterly Narrative and Graphical and Report. Individual Reports. Water-years 1997, 1998, 1999, 2000. San Francisco Estuary Project, Richmond, CA.
- SFEI. Grassland Bypass Project, Annual Report. Individual Reports, Water-year 1997, 1998, 1999, 2000(in process). San Francisco Estuary Project, Richmond, CA.

Administrative Documents

- U.S. Bureau of Reclamation. Finding of No Significant Impact and Supplemental Environmental Assessment for the Grassland Bypass Channel Project. U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA. November 1995.
- U.S. Bureau of Reclamation. Compliance Monitoring Program for use and Operation of the Grassland Bypass Project. U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA. September 1996.
- U.S. Bureau of Reclamation. Compliance Monitoring Program for use and Operation of the Grassland Bypass Project, Phase II. U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA. July 2001.
- Entrix, Inc. Quality Assurance Project Plan (QAPP) for the Compliance Monitoring Plan of the Grassland Bypass Project. U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA. June 1997.
- California Regional Water Quality Control Board, Central Valley Region. Order No. 98-171. Waste Discharge Requirements for the San Luis & Delta-Mendota Water Authority and U.S.D.I. USBR Grassland Bypass Channel Project Fresno and Merced Counties. CVRWQCB, Sacramento, CA. August 1998.
- URS. Grassland Bypass Project, Environmental Impact Statement and Environmental Impact Report. U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA. June 2001.

Table 1: Flow Monitoring Specifications

| Station | Station Description | Proposed Monitoring Plan |
|----------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| A | San Luis Drain @ Check 17 | Continuous recorder, Stage, SLDMWA |
| B | San Luis Drain between Check 1 and terminus | Continuous recorder, Stage, USGS |
| C | Mud Slough (North), upstream of SLD terminus | Weekly (to correspond with weekly water quality grab sample), flow derived from daily data from Stations B and D |
| D | Mud Slough (North), downstream of SLD terminus | Continuous recorder, Stage, USGS |
| F | Salt Slough @ HWY 165 | Continuous recorder, Stage, USGS |
| J | Camp 13 Ditch, North of Main Canal | Daily estimate, Grassland Water District (used to correspond with weekly water quality grab sample) |
| K | Agatha Canal | Daily estimate, Grassland Water District |

| | | |
|-----------|-----------------------------------|--------------------------------------------------------------------------------------------------------|
| | | (used to correspond with weekly water quality grab sample) |
| L2 | San Luis Canal at Splits | Daily estimate, Grassland Water District (used to correspond with weekly water quality grab sample) |
| M2 | Santa Fe Canal at weir | Daily estimate, Grassland Water District (used to correspond with weekly water quality grab sample) |
| N | San Joaquin River @ Crows Landing | Continuous recorder, Stage, USGS |
| G | San Joaquin River @ Fremont Ford | Continuous recorder, Stage, USGS |

Table 2: Water Quality Monitoring Specifications

| Station | Station Description | Proposed Monitoring Plan |
|----------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A | San Luis Drain @ Check 17 | Continuous recorder, EC, Temperature., SLDMWA Weekly, EC, Selenium, Boron, Total Suspended Solids, SLDMWA |
| B | San Luis Drain between Check 1 and terminus | Continuous recorder, EC, Temperature, USGS Daily, EC, Selenium, Boron, CVRWQCB Weekly, pH, EC, Temperature, Selenium, Boron, Total Suspended Solids, CVRWQCB Monthly, Molybdenum, Nutrient Series, CVRWQCB, Notes 1, 2 |
| C | Mud Slough (North), upstream of SLD terminus | Weekly, pH, EC, Temperature, Selenium, Boron, CVRWQCB Monthly, Molybdenum, Nutrient Series, CVRWQCB, Notes 1, 2, 3 |
| D | Mud Slough (North), downstream of SLD terminus | Continuous recorder, EC, Temperature, USGS Weekly, pH, EC, Temperature, Selenium, Boron, CVRWQCB Monthly, Molybdenum, Nutrient Series, CVRWQCB, Notes 1, 2, 3 |
| F | Salt Slough @ HWY 165 | Continuous recorder, Temperature, EC, USGS Weekly, Temperature, pH, EC, Selenium, Boron, CVRWQCB |
| J | Camp 13 Ditch, North of Main Canal | Weekly, EC, Selenium, Boron, SLDMWA |
| K | Agatha Canal | Weekly, EC, Selenium, Boron, SLDMWA |
| L2 | San Luis Canal at Splits | Weekly, EC, Selenium, Boron, SLDMWA |
| M2 | Santa Fe Canal at weir | Weekly, EC, Selenium, Boron, SLDMWA |
| N | San Joaquin River @ Crows Landing | Continuous recorder, EC, Temperature, USGS |

| | | |
|----------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Weekly, pH, EC, Temperature, Selenium, Boron, CVRWQCB Monthly, Molybdenum, Nutrient Series, CVRWQCB, Notes 1, 2 |
| G | San Joaquin River @ Fremont Ford | Continuous recorder, EC, Temperature, USGS Weekly, pH, EC, Temperature, Selenium, Boron, CVRWQCB Monthly, Molybdenum, Nutrient Series, CVRWQCB, Notes 1, 2 |
| H | San Joaquin River @ Hills Ferry | Weekly, EC, Selenium, Boron, SLDMWA |

Note 1: Parameters included in the Nutrient Series are Nitrate, Ammonia, Total Kjeldahl Nitrogen, Total Phosphate, and Ortho Phosphate (required by the Waste Discharge Permit).

Note 2: Nutrient Series sampling increases to every other week during irrigation season (March through August) (required by the Waste Discharge Permit).

Note 3: During sampling of the receiving waters, a log shall be kept of the receiving water conditions throughout reach bounded by Stations C and D; attention shall be given to the presence or absence of:
a. floating or suspended matter, b. discoloration, c. bottom deposits, and d. aquatic life (required by the Waste Discharge Permit).

Table 3: Biological Monitoring Specifications

| Station | Station Description | Proposed Monitoring Plan |
|----------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| C | Mud Slough (North), upstream of SLD terminus | Seasonal (March, June, August, November), selenium concentrations in tissues, diversity, USFWS |
| D | Mud Slough (North), downstream of SLD terminus | Seasonal (March, June, August, November), selenium concentrations in tissues, diversity, USFWS |
| E | Mud Slough (North) @ HWY 140 | Seasonal (March, June, August, November), selenium concentrations in tissues, diversity, CDFG |
| I2 | Mud Slough (North) backwater area | Seasonal (March, June, August, November), selenium concentrations in tissues, diversity, USFWS See Note 1. |
| F | Salt Slough @ HWY 165 | Seasonal (March, June, August, November), selenium concentrations in tissues, diversity, USFWS |
| G | San Joaquin River @ Fremont Ford | Seasonal (March, June, August, November), selenium concentrations in tissues, diversity, CDFG |
| H | San Joaquin River @ Hills Ferry | Seasonal (March, June, August, November), selenium concentrations in tissues, diversity, CDFG |

Table 4: Toxicity Monitoring Specifications

| Station | Station Description | Proposed Monitoring Plan |
|----------------|------------------------------------|-----------------------------------------------------------|
| B | San Luis Drain between Check 1 and | Seasonal, larval survival and growth for fathead minnows, |

| | | |
|------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | terminus | larval survival and reproduction for <i>Daphnia magna</i> , and <i>Selenastrum capricornutum</i> growth, BES; water quality in sampled waters, selenium concentrations, USBR, sulfate concentrations, USBR and total suspended solids, BES |
| C | Mud Slough (North), upstream of SLD terminus | Same as Station B |
| D | Mud Slough (North), downstream of SLD terminus | Same as Station B |
| F | Salt Slough @ HWY 165 | Flood event monitoring only; when sampled, same as Station B |
| DMC | Delta Mendota Canal | Same as Station B |

Table 5: Sediment Monitoring Specifications (Quality, in association with biological monitoring)

| Station | Station Description | Proposed Monitoring Plan |
|----------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| C | Mud Slough (North), upstream of SLD terminus | Seasonal (March, June, August, November), Selenium, Total Organic Carbon, Per Cent Moisture, 0-3 cm, 3-8 cm, whole core, USBR |
| D | Mud Slough (North), downstream of SLD terminus | Seasonal (March, June, August, November), Selenium, Total Organic Carbon, Per Cent Moisture, 0-3 cm, 3-8 cm, whole core, USBR |
| E | Mud Slough (North) @ HWY 140 | Seasonal (March, June, August, November), Selenium, Total Organic Carbon, Per Cent Moisture, 0-3 cm, 3-8 cm, whole core, USBR |
| I2 | Mud Slough (North) backwater area | Seasonal (March, June, August, November), Selenium, Total Organic Carbon, Per Cent Moisture, 0-3 cm, 3-8 cm, whole core, USBR, see Note 1. |
| F | Salt Slough @ HWY 165 | Seasonal (March, June, August, November), Selenium, Total Organic Carbon, Per Cent Moisture, 0-3 cm, 3-8 cm, whole core, USBR |

Table 6: San Luis Drain Sediment Monitoring Specifications (Quality)

| Station | Station Description | Proposed Monitoring Plan |
|----------------|---------------------------------------------|-----------------------------------------------------------------------------|
| B | San Luis Drain between Check 1 and terminus | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | 50' South of Check 1 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | Midpoint of Checks 1 & 2 | Annual, Selenium, Total Organic Carbon, Per Cent |

| | | |
|----------|----------------------------|--------------------------------------------------------------------------------|
| | | Moisture, whole core, USBR |
| | 50' North of check 2 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | 50' South of Check 10 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | Midpoint of Checks 10 & 11 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | 50' North of check 11 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | 50' South of Check 14 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | Midpoint of Checks 14 & 15 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | 50' North of check 15 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| A | San Luis Drain @ Check 17 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | Midpoint of Checks 17 & 18 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |
| | 50' North of check 18 | Annual, Selenium, Total Organic Carbon, Per Cent Moisture, whole core, USBR |

Table 7: San Luis Drain Sediment Monitoring Specifications (Quantity)

| Pool | Checks | Proposed Monitoring Plan |
|-------------|---------------|-----------------------------------|
| 1 | 1 to 2 | Annual, Sediment in Drain, SLDMWA |
| 10 | 10 to 11 | Annual, Sediment in Drain, SLDMWA |
| 14 | 14 to 15 | Annual, Sediment in Drain, SLDMWA |
| 17 | 17 to 18 | Annual, Sediment in Drain, SLDMWA |

Figure 1. Map of the Grassland Bypass Project

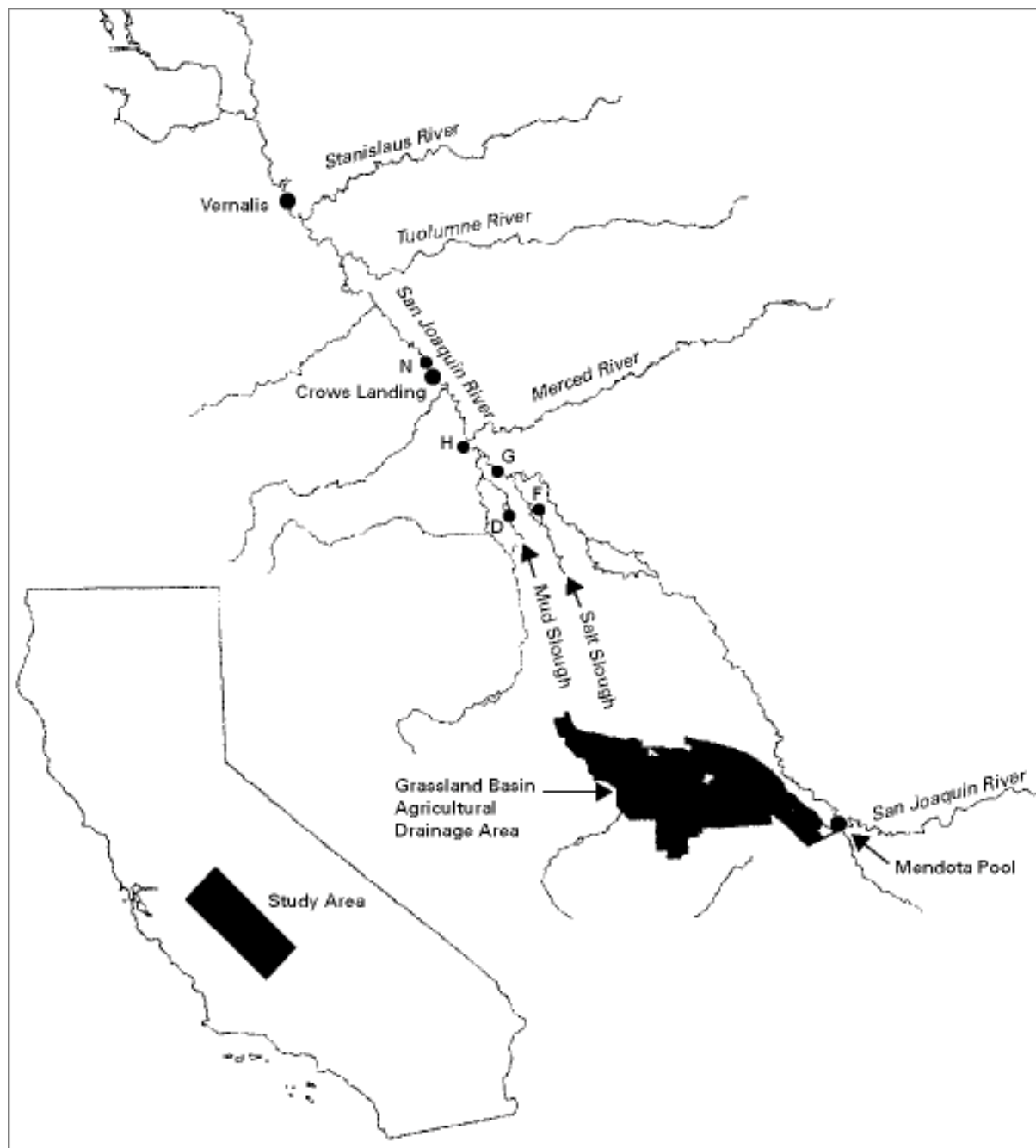


Figure 2. Schematic Diagram Showing Locations of GBP Monitoring Sites Relative to Major Hydrologic Features of the Study Area

